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REMARKS

In view of the following discussion, the Applicants submit that none of the claims now pending in the application are made obvious under the provisions of 35 U.S.C. §103. The Applicants believe that all of these claims are now in allowable form.

I. REJECTIONS OF CLAIMS 1-14 UNDER 35 U.S.C. § 103

The Examiner rejected claims 1-14 under 35 U.S.C. §103 as being obvious over Gupta, Sandeep K.S. and Srimani, Pradip K. ("An Adaptive Protocol for Reliable Multicast in Mobile Multi-hop Radio Networks," (IEEE, 1999)) hereinafter referred to as "Gupta") in view of the Humblet et al. patent (United States Patent No. 5,671,357, issued September 23, 1997, hereinafter referred to as "Humblet"). In response, the Applicants have cancelled claims 1-14 without prejudice. Accordingly, the Applicants respectfully submit that the rejection of claims 1-14 is moot.

II. NEW CLAIMS

The Applicants have added new claims 15-34. The Applicants note the Examiner's rejections with respect to cancelled claims 1-14, and respectfully submit that Gupta and Humblet fail, singly or in any permissible combination, to teach, show or suggest the novel invention of disseminating a topology update via a path tree rooted at a source that originated the update, as claimed by the Applicants in new independent claims 15 and 25.

The Examiner submits that the core node taught by Gupta is equivalent to the claimed "source node." The Applicants respectfully disagree with this characterization and submit that Gupta's core node is not equivalent to the claimed "source node" or "source." As defined in the Applicants' claims, a "source node" or "source" is a node "from which [an] update message originated" (emphasis added). The core node taught by Gupta clearly does not originate update messages, but merely facilitates multicasting of update messages originating from other (source) nodes.

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In fact, the portion of Gupta (*i.e.*, section 3.1.1, second paragraph) that the Examiner cites to demonstrate the teaching of a core node as a source of an update message supports the Applicants' position. In particular, the first sentence of the cited section states: "The source node sends the multicast message to the core node of the group" (emphasis added). This sentence clearly demonstrates that the source node (*i.e.* the node from which the multicast message originated) and the core node are two different nodes.

The Examiner submits in the Final Office Action that Gupta is the source of the messages because "Gupta clearly states that the core node ... initiates multicasting" (Page 14, emphasis in original). However, initiating multicasting of a message is not the same as originating the message. By contrast, the core node merely serves as an intermediary that facilitates multicasting of messages that are provided to it by source nodes (*i.e.*, the nodes from which the messages actually originated). As discussed above, Gupta clearly draws a distinction between a source node and a core node.

Moreover, because Gupta's core node is not a "source node" within the meaning of the Applicants' claims (*i.e.*, is not the node from which a multicast message originates), the message cannot be forwarded in accordance with a path tree rooted at the source node; instead, the message is forwarded via a multicast tree rooted at the core node, which, as was just established, is not the "source node."

Thus, Gupta clearly teaches the use of a single core-based tree that is shared by all source nodes to send multicast messages. That is, Gupta teaches that a source that originates a message forwards the message to a core node of a multicast group, and that the core node then forwards the message to other members of the multicast group in accordance with a "shared multicast tree rooted at the core node of the multicast group" (See, e.g., Gupta, Section 3.1.1, first paragraph, emphasis added). Thus, messages are sent and received over a single, shared tree regardless of point of origination (or, for all points of origination).

The Applicants clearly claim the step of disseminating a topology update via a path tree rooted at a source that originated the update. That is, the node that originates an update message forwards the update message to other nodes using a discrete path

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tree that is rooted at the originating node itself. Each node in the network is thus potentially a "source node" within the meaning of the Applicants' claims. Thus, when "a sender [source/originator] wants to multicast [disseminate] a message [an update message] to members of a group," the sender does not need to "send[] a MULTICAST message to [a] core node of the group ... [to] initiate[] dissemination of the message", as is taught by Gupta (See, Gupta, Section 1, fifth paragraph). The sender simply sends the message, using the path tree rooted at itself. Thus, as discussed above, the core node taught by Gupta is not equivalent to the claimed "source node," as alleged by the Examiner. Humblet fails to bridge these gaps in the teachings of Gupta. Specifically, Humblet also fails to teach, show or suggest forwarding disseminating a topology update via a path tree rooted at a source that originated the update, as claimed by the Applicants in claims 15 and 25. Thus, while Gupta in combination with Humblet describes a single core-based tree for forwarding update messages, the update architecture described in the application involves multiple source- or originator-based trees (i.e., one for each node that can originate an update message) that simultaneously exist, which is a critical contrasting point of difference between the two approaches.

Thus, as discussed above, Gupta and Humblet fail, singly or in any permissible combination, to disclose or suggest disseminating a topology update via a path tree rooted at a source that originated the update, as positively claimed by the Applicants. Applicants' independent claims 15 and 25 positively recite:

15. A method for disseminating topology and link state information in a multi-hop network, the method comprising:
maintaining, at a source node in the multi-hop network, a path tree rooted at the source node;
originating, at the source node, an update message containing topology or link state information; and
sending the update message, by the source node, to one or more children of the source node that are indicated by the path tree rooted at the source node.
(Emphasis added)

25. A method for disseminating topology and link state information in a multi-hop network including a plurality of nodes, the method comprising:

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receiving, at a first node in the multi-hop network, an update message containing topology or link state information, the update message being received from a parent of the first node that is indicated by a path tree rooted at a source from which the update message originated;

updating, at the first node, a table of network topology stored at the first node in accordance with the update message; and

forwarding the update message, by the first node, to one or more children of the first node that are indicated by the path tree rooted at the source.
(Emphasis added)

Thus, as Gupta and Humblet fail, singly or in any permissible combination, to teach, show or suggest the novel invention of disseminating a topology update via a path tree rooted at a source that originated the update, the Applicants respectfully submit that claims 15 and 25 fully satisfy the requirements of 35 U.S.C. §103 and are patentable thereunder.

Dependent claims 16-24 and 26-34 depend, either directly or indirectly, from claims 15 and 25 and recite additional features. As such and for at least the same reasons set forth above, the Applicants submit that claims 16-24 and 26-34 are also not made obvious by the teachings of Gupta in view of Humblet. Therefore, the Applicants submit that claims 16-24 and 26-34 also fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

III. CONCLUSION

Thus, the Applicants submit that none of the presented claims is made obvious under the provisions of 35 U.S.C. § 103. Consequently, the Applicants believe that all of the presented claims are presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.


If, however, the Examiner believes that there are any unresolved issues requiring the maintenance of the final action in any of the claims now pending in the application, it is requested that the Examiner telephone Mr. Kin-Wah Tong at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

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Respectfully submitted,

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